

Skin Problems in Children with Hip Spica Casts

Fractures of the femur (thigh bone) in young children often require a special hip-to-toe cast called a hip spica cast. In this study, the rate of skin problems caused by hip spica casts is investigated.

The authors are a group of nurses from Children's Hospital in Boston. They did a chart review of 297 children who were patients at their hospital between 2003 and 2009. The children all had a hip spica cast for a femoral fracture. They divided the children into two groups and compared them.

Group one included children who did not develop any skin complications during their immobilization for fracture healing. Group two was made up of children who came back to the clinic because of skin problems. The type of skin complications seen included skin irritation, skin rash, skin redness, scratches, or blisters.

Children in both groups were between the ages of six months and eight years old. The boys outnumbered the girls three-to-one. The number one reason for the bone fracture was listed as child abuse. In a smaller number of other cases, either an object fell on the child, the parent fell while carrying the child, or there was trauma from what was described as a "high-energy collision".

Most skin breakdown associated with spica cast application occurs as a result of urine or feces getting under the cast or soiling the edges. Moisture and chemicals from urine and stool irritate the protective outer layer of skin. Additional complications can occur if bacteria entering open cracks or sores and cause infection.

Cast pressure (too tight or too loose) or a loose object under the cast also accounts for a fair number of skin problems. The specific types of foreign objects in the cast of these children were not listed but over the years, surgeons have reported finding a wide variety of objects from small toys or crayons to rocks, money, paper clips, food, and pretty much anything children can stuff down inside the cast.

Nurses, physicians, physical therapists, and other health care professionals who work with children in hip spica casts are interested in preventing such problems as skin irritation and/or skin breakdown. Knowing who is at risk helps them monitor and identify early at-risk children.

The results of this study showed that younger children (less than two years old) and those who wear a hip spica cast 40 days or more have an increased risk of skin problems. Children who were the victims of child abuse are also more likely to develop skin irritation or breakdown. Boys were not more likely than girls to develop skin complications.

A second focus of this study was the costs associated with skin complications. Extra medical visits and the need to change the cast (remove the first cast and replace it with another) drive up the cost of care for these children. It is often necessary to hospitalize young children in need of a cast change. The procedure is done under anesthesia requiring the added costs of the surgeon, materials, medications, anesthesia, the anesthesiologist, the operating room, and the operating room staff.

In this study, group one (no skin problems) only required removal of the cast at the end of treatment. The cast was bivalved (cut in half lengthwise) and used as a splint for a short transition time. The total cost for this procedure was between \$400 and \$450. These costs are compared to \$8600 up to \$53,800 for a cast removal and recasting.

The results of this study confirm the high rate and cost of skin problems in children with hip spica casts for femur fractures. Almost one-third of the total group required early removal of the cast and recasting. The

high costs of skin complications requiring a cast change may be reduced with careful attention to children identified early as "at-risk" for such problems.

Younger age (not yet potty trained) and abuse are the most significant risk factors for skin breakdown. These children should not be kept in a spica cast any longer than necessary. Cast removal is advised as soon as possible. Longer periods of immobilization raise the risk of skin problems. Close monitoring (possibly mandatory supervision) for children at risk for child abuse is suggested as a prevention measure.

Other steps in prevention of potentially costly skin complications for children with spica casts may be helpful. The authors suggest additional patient education could include written materials and videos on the proper care of cast and child. Follow-up visits may be cost-effective. Using slightly more expensive waterproof materials (liners, padding, cast) may not always be needed but could prevent problems in at-risk children.

Reference: Rachel DeFazio, PhD(c), RN, cPNP, et al. Incidence of Skin Complications and Associated Charges in Children Treated with Hip Spica Casts for Femur Fractures. In *Journal of Pediatric Orthopaedics*. January/February 2011. Vol. 31. No. 1. Pp. 17-22.